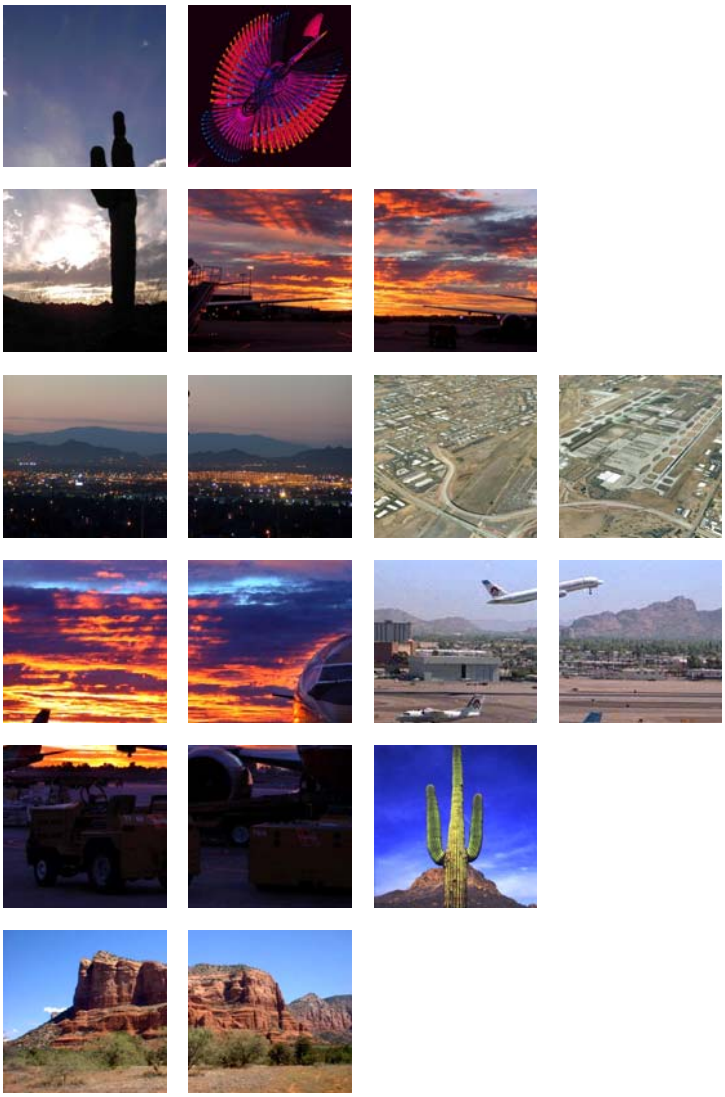

Section 8

Financial Feasibility

Section 8 Financial Feasibility

The financial feasibility of the Phoenix site is determined in this section. This effort looks at the available data sources; the methodology used in determining the feasibility; and the results of these inputs in determining the financial feasibility of this site. Information from the 1995 Feasibility Study and the City of Phoenix Fire Training Academy Master Plan was utilized and updated as appropriate to be consistent with concurrent efforts to develop a Regional ARFF Training Facility in the State of Arizona.

8.1 Available Data Sources

The first step in determining the financial feasibility of a project is to acquire the appropriate data that is available for the project. This data consists of capital costs, operation and maintenance costs, and the expected utilization of the facility. Data from earlier sections of this report, was used and new data was developed where necessary in this section.

8.1.1 Capital / Construction Costs

The Phoenix Fire Training Academy Site's capital and construction costs were derived in Section 7 of this report. Since there is only one site that this report continued to review, the construction costs for this site are the only costs discussed in this section. In addition, these cost estimates only consider a propane facility due to environmental factors (e.g., air quality) related to the proposed location.

The facility shown in Section 7 is considered an ultimate facility. Design and construction costs for an ARFF training facility could vary from the one presented here. The capital construction cost for the Regional ARFF Training Facility presented in the previous section is $17,156,499. A summary breakdown of these costs are shown in the table below:

Table 8.01

Summary of Capital / Construction Costs

Item	Cost
Permitting at 1%	$130,219
Design at 10%	$1,302,190
Construction	$13,021, 900
Inspection at 10%	$1,302,190
ARFF Vehicles	$1,400,000
Total	**$17,156,499**

8.1.2 Operation and Maintenance Costs

The operation and maintenance costs are an important factor in determining if a facility will be financially feasible. While it can be tough to estimate the operation and maintenance costs of a

facility before it is constructed, certain assumptions can be made to assess the potential costs while making assumptions on various levels of inputs.

Operation and maintenance costs were assessed for a propane facility. These include routine maintenance of the facility, consumables used in the operation of the equipment, utilities, repair parts for the training equipment, labor costs of the trainers and repair technicians, insurance, office supplies and materials, etc.

In consideration of previous reports and information obtained from the industry, the annual operation and maintenance costs were estimated to be $294,300. This preliminary cost estimate was prepared for planning and financial feasibility purposes and could vary based on the final design, operation and utilization of the training facility.

The operation and maintenance costs were derived from the following assumptions. A leading industry ARFF training equipment manufacturer provided the estimate for the operation, including consumables of the ARFF training equipment. The other amounts were estimated based on information from previous reports, existing industry data, and expert judgment. Table 8.02 summarizes the operation and maintenance cost used in this financial feasibility.

Table 8.02

Summary of Operation and Maintenance Costs

Item	Cost
Equipment and Consumables	$100,000
Staff	$105,000
Staff Cost Factor at 35% (Insurance, taxes, etc.)	$40,250
Miscellaneous at 20%	$49,050
Total	**$294,300**

The assumptions made in the above table include the following:

- Equipment and consumables are variable and assumed a maximum level of use. A reduced utilization of the equipment will result in a reduced cost.

- Staff includes a Lead Instructor/Marketer at $50,000; an Instructor at $35,000; and an administrative assistant at $20,000. All are annual costs.

- A 35 percent adjustment factor was added to staff costs to allow for insurance, income taxes and miscellaneous employment costs.

- A miscellaneous assumption of 20 percent was included to allow for additional utilities, facility insurance, office/training supplies, and a facility repair fund.

- The operation and maintenance cost will be escalated at a rate equal to the ten-year average of the Consumer Price Index (CPI).

8.1.3 Facility Utilization

In determining the financial feasibility of any capital investment, assumptions must be made regarding the ability to payback, or recoup the investment costs. Section 4 of this report identified potential facility utilization based on the number of ARFF firefighters at airports in Arizona and surrounding states, and by conducting a survey of those airports and other fire departments who may also wish to obtain specialized ARFF training.

The following table is a summary of the potential regional demand based on the number of airports in Arizona and surrounding states in the Region:

Table 8.03

Regional ARFF Firefighters
Demand by Type and Location

ARFF Firefighter Type and Location	Approximate # of Firefighters
Arizona Part 139 Airports	248
Arizona Military Airports	292
Out-of-State Part 139 Airports	194
Part 139 Subtotal:	**734**
Arizona Non-Airport Firefighters	632
City of Goodyear Anticipated Increase	50
New Part 139 ARFF Indices	111
Other Subtotal:	**793**
Total Estimated Annual Demand:	**1527**

As a result of the survey, Section 4 also documented other information helpful in developing assumptions for this financial feasibility. Most importantly, this survey identified that ARFF training budgets varied significantly from $100 to $3,000, with the average from 12 surveys at $1,100 per student. In addition, the most desirable location was central Arizona which is airline accessible. The Phoenix site meets both of these criteria and offers numerous airline options and is located in an interstate highway accessible location.

8.2 Methodology

There are myriad scenarios and assumptions that can be used to review the financial feasibility of this facility. Considering the use of the training center, potential economies of scale if operated in conjunction with the City of Phoenix Fire Training Academy, and the potential availability of FAA grant funds for construction, makes it worthwhile to review a few different scenarios. This financial feasibility is traditional in the sense of how benefit cost analysis and net present value is calculated, but also examines various possibilities.

For this feasibility analysis, the project benefits and costs were computed using the following definitions and assumptions:

- Net Present value (NPV): the present value of project benefits minus the present value of costs over the evaluation period of the project.
- Benefit-Cost Ratio: defined as the present value of project benefits divided by the present value of the project costs.
- Discount Rate: 7% was used in this analysis.
- Ten Year Average Consumer Price Index: 2.46%. Both revenues and operation and maintenance costs were escalated using the average CPI.

8.3 Financial Feasibility Scenarios

This analysis examines three scenarios with two options under each scenario. The main point of these scenarios is to consider financial feasibility from a few different perspectives than is traditionally calculated. By doing this, this analysis is hoping to shed some insight into future results that may be seen if this facility is constructed and identifying the revenue required to meet the objective of the scenario. Keep in mind that not all of the options analyzed in this section are realistic, but they create the context for each scenario.

8.3.1 Scenario One – All Costs

Scenario One looks at a Benefit Cost ratio of 1.0 and 0.5 for the Regional ARFF Training Facility and the annual revenue per trainee required to obtain that Benefit Cost ratio. This scenario analysis considers the Net Present Value of all construction costs, and operation and maintenance costs. Option one assumed 1527 users would use the facility annually and option two assumed 763 users annually. By already having these two inputs, an average annual revenue per trainee was derived equaling $1,263. Additional inferences can then be made, for instance: average annual revenue per trainee of $2,527 would obtain a 1.0 benefit cost for the 763 user option. The results for scenario one are shown in Tables 8.04 and 8.05.

Table 8.04

ARFF Regional Training Facility Scenario One - 1527 Users Benefit Cost Ratio: 1.00			
Year	**Revenue**	**Cost**	**Cost/Benefit**
2006		$ 17,156,499	$ (17,156,499)
2007	$ 1,929,563	$ 294,300	$ 1,635,263
2008	$ 1,977,030	$ 301,540	$ 1,675,490
2009	$ 2,025,665	$ 308,958	$ 1,716,708
2010	$ 2,075,497	$ 316,558	$ 1,758,939
2011	$ 2,126,554	$ 324,345	$ 1,802,208
2012	$ 2,178,867	$ 332,324	$ 1,846,543
2013	$ 2,232,467	$ 340,499	$ 1,891,968
2014	$ 2,287,386	$ 348,876	$ 1,938,510
2015	$ 2,343,656	$ 357,458	$ 1,986,197
2016	$ 2,401,309	$ 366,252	$ 2,035,058
2017	$ 2,460,382	$ 375,261	$ 2,085,120
2018	$ 2,520,907	$ 384,493	$ 2,136,414
2019	$ 2,582,921	$ 393,951	$ 2,188,970
2020	$ 2,646,461	$ 403,642	$ 2,242,819
2021	$ 2,711,564	$ 413,572	$ 2,297,992
2022	$ 2,778,269	$ 423,746	$ 2,354,523
2023	$ 2,846,614	$ 434,170	$ 2,412,444
2024	$ 2,916,641	$ 444,851	$ 2,471,790
2025	$ 2,988,390	$ 455,794	$ 2,532,596
2026	$ 3,061,905	$ 467,007	$ 2,594,898
NPV Total	**$ 24,644,137**	**$ 24,644,096**	**$ 42**

Table 8.05

ARFF Regional Training Facility Scenario One - 763 Users Benefit Cost Ratio: 0.50			
Year	**Revenue**	**Cost**	**Cost/Benefit**
2006		$ 17,156,499	$ (17,156,499)
2007	$ 964,150	$ 294,300	$ 669,850
2008	$ 987,868	$ 301,540	$ 686,328
2009	$ 1,012,169	$ 308,958	$ 703,212
2010	$ 1,037,069	$ 316,558	$ 720,511
2011	$ 1,062,581	$ 324,345	$ 738,235
2012	$ 1,088,720	$ 332,324	$ 756,396
2013	$ 1,115,503	$ 340,499	$ 775,003
2014	$ 1,142,944	$ 348,876	$ 794,068
2015	$ 1,171,060	$ 357,458	$ 813,602
2016	$ 1,199,868	$ 366,252	$ 833,617
2017	$ 1,229,385	$ 375,261	$ 854,124
2018	$ 1,259,628	$ 384,493	$ 875,135
2019	$ 1,290,615	$ 393,951	$ 896,664
2020	$ 1,322,364	$ 403,642	$ 918,722
2021	$ 1,354,894	$ 413,572	$ 941,322
2022	$ 1,388,225	$ 423,746	$ 964,479
2023	$ 1,422,375	$ 434,170	$ 988,205
2024	$ 1,457,365	$ 444,851	$ 1,012,515
2025	$ 1,493,217	$ 455,794	$ 1,037,423
2026	$ 1,529,950	$ 467,007	$ 1,062,943
NPV Total	**$ 12,313,999**	**$ 24,644,096**	**$ (12,330,096)**

8.3.2 Scenario Two – No Operation and Maintenance Costs

Scenario Two looks at the same Benefit Cost ratios of 1.0 and 0.5 for the ARFF Regional Training Facility and the annual revenue per trainee required to obtain that Benefit Cost ratio. This scenario analysis considers the Net Present Value of all construction costs, but does not include any operation and maintenance costs. Again, option one assumed 1527 users would use the facility annually and option two assumed 763 users annually. By already having these two inputs, average annual revenue per trainee was derived equaling $441. Additional inferences can then be made, for instance: average annual revenue per trainee of $883. would obtain a 1.0 benefit cost for the 763 user option. The results for scenario two are shown in Tables 8.06 and 8.07.

Table 8.06

ARFF Regional Training Facility Scenario Two - 1527 Users			
		Benefit Cost Ratio:	1.00
Year	Revenue	Cost	Cost/Benefit
2006		$ 17,156,499	$ (17,156,499)
2007	$ 674,338		$ 674,338
2008	$ 690,927		$ 690,927
2009	$ 707,924		$ 707,924
2010	$ 725,339		$ 725,339
2011	$ 743,182		$ 743,182
2012	$ 761,465		$ 761,465
2013	$ 780,197		$ 780,197
2014	$ 799,389		$ 799,389
2015	$ 819,054		$ 819,054
2016	$ 839,203		$ 839,203
2017	$ 859,848		$ 859,848
2018	$ 881,000		$ 881,000
2019	$ 902,672		$ 902,672
2020	$ 924,878		$ 924,878
2021	$ 947,630		$ 947,630
2022	$ 970,942		$ 970,942
2023	$ 994,827		$ 994,827
2024	$ 1,019,300		$ 1,019,300
2025	$ 1,044,375		$ 1,044,375
2026	$ 1,070,066		$ 1,070,066
NPV Total	**$ 17,156,556**	**$ 17,156,499**	**$ 57**

Table 8.07

ARFF Regional Training Facility Scenario Two - 763 Users			
		Benefit Cost Ratio:	0.50
Year	Revenue	Cost	Cost/Benefit
2006		$ 17,156,499	$ (17,156,499)
2007	$ 336,948		$ 336,948
2008	$ 345,237		$ 345,237
2009	$ 353,730		$ 353,730
2010	$ 362,432		$ 362,432
2011	$ 371,348		$ 371,348
2012	$ 380,483		$ 380,483
2013	$ 389,843		$ 389,843
2014	$ 399,433		$ 399,433
2015	$ 409,259		$ 409,259
2016	$ 419,327		$ 419,327
2017	$ 429,642		$ 429,642
2018	$ 440,211		$ 440,211
2019	$ 451,041		$ 451,041
2020	$ 462,136		$ 462,136
2021	$ 473,505		$ 473,505
2022	$ 485,153		$ 485,153
2023	$ 497,088		$ 497,088
2024	$ 509,316		$ 509,316
2025	$ 521,845		$ 521,845
2026	$ 534,683		$ 534,683
NPV Total	**$ 8,572,660**	**$ 17,156,499**	**$ (8,583,839)**

8.3.3 Scenario Three – No Capital / Construction Costs

Scenario Three takes a different approach. As a result of the required training and the potential availability for FAA grant funds to construct some portion of this facility, if not all, this scenario does not consider any capital / construction costs in the analysis. Instead, this scenario calculates the average annual training rate to cover the operation and maintenance of the facility. Once again, option one assumed 1527 users would use the facility annually and option two assumed 763 users annually. By already having these two inputs and using the estimated operation and maintenance costs, the average annual rate per trainee was derived. The results for scenario three are shown in Tables 8.08 and 8.09.

Table 8.08

ARFF Regional Training Facility Scenario Three - 1527 Users			
Year	Users	O&M Cost	Average Rate
2006		Design & Construction	
2007	1,527	$ 294,300	$ 193
2008	1,527	$ 301,540	$ 197
2009	1,527	$ 308,958	$ 202
2010	1,527	$ 316,558	$ 207
2011	1,527	$ 324,345	$ 212
2012	1,527	$ 332,324	$ 218
2013	1,527	$ 340,499	$ 223
2014	1,527	$ 348,876	$ 228
2015	1,527	$ 357,458	$ 234
2016	1,527	$ 366,252	$ 240
2017	1,527	$ 375,261	$ 246
2018	1,527	$ 384,493	$ 252
2019	1,527	$ 393,951	$ 258
2020	1,527	$ 403,642	$ 264
2021	1,527	$ 413,572	$ 271
2022	1,527	$ 423,746	$ 278
2023	1,527	$ 434,170	$ 284
2024	1,527	$ 444,851	$ 291
2025	1,527	$ 455,794	$ 298
2026	1,527	$ 467,007	$ 306

Table 8.09

ARFF Regional Training Facility Scenario Three - 763 Users			
Year	Users	O&M Cost	Average Rate
2006		Design & Construction	
2007	763	$ 294,300	$ 386
2008	763	$ 301,540	$ 395
2009	763	$ 308,958	$ 405
2010	763	$ 316,558	$ 415
2011	763	$ 324,345	$ 425
2012	763	$ 332,324	$ 436
2013	763	$ 340,499	$ 446
2014	763	$ 348,876	$ 457
2015	763	$ 357,458	$ 468
2016	763	$ 366,252	$ 480
2017	763	$ 375,261	$ 492
2018	763	$ 384,493	$ 504
2019	763	$ 393,951	$ 516
2020	763	$ 403,642	$ 529
2021	763	$ 413,572	$ 542
2022	763	$ 423,746	$ 555
2023	763	$ 434,170	$ 569
2024	763	$ 444,851	$ 583
2025	763	$ 455,794	$ 597
2026	763	$ 467,007	$ 612

8.4 Financial Feasibility Analysis Summary

As a result of the above financial analysis, it is evident that there are different ways to view the financial feasibility of this project. The intent in this effort was to identify different perspectives in determining the financial feasibility and the many areas that may need to be considered. The following table summarizes the previous section findings.

Table 8.10

Financial Feasibility Analysis Summary

Name	# of Annual Users	B/C Ratio	Average Revenue Required
Scenario One	1,527	1.0	$1,263
Scenario One	763	0.5	$1,263
Scenario Two	1,527	1.0	$441
Scenario Two	763	0.5	$441
Scenario Three	1,527	N/A	$193*
Scenario Three	763	N/A	$386*

** Increases each year*

As with any project, the financial role of the facility must be determined. The business development and marketing can play a large role in the success or failure of the facility. Should the facility breakeven? If not, where will the subsidy come from? Are there economies of scale by being part of a larger fire training facility? The Phoenix site is a central location that has low-fare air service to many cities in the southwest and beyond. The ultimate feasibility of this training facility rests in the business plan and training curricula that will be offered. The financial analysis in this section is meant to give context and guidance to the further development of this facility.